CHAPTER 7

DOUBLE AND TRIPLE TRAILERS

This chapter contains information you will need for safe driving with double all triiple trailers. It addresses the importance of safe driving when towing more than one trailer. It also explains how to couple, uncouple, inspect, and perform air brake checks.

NOTE: The military will not test you on double and triple trailers since they are not in the inventory. However, DMV will administer you the test if you are getting a double/triple trailer endorsement to drive commercial motor vehicles.

7-1. PULLING DOUBLE OR TRIPLE TRAILERS. Exercise special care when pulling double or triple trailers. They are not as stable as other vehicles and there are more things that can go wrong when pulling them.

To prevent trailers from rolling over, you must steer gently and go slowly around corners, on-ramps, off-ramps, and curves. A safe speed on a curve for a straight truck or a single tractor and trailer combination vehicle may be too fast for double and triple trailers.

Double and triple trailers are more likely to turn over because of the crack-the-whip effect. You must steer gently when pulling trailers. The last trailer in a combination is most likely to turn over. If you do not completely understand the crack-the-whip effect, study Chapter 6 and review Figure 6-1.

Inspect your vehicle correctly and completely. There are more critical parts to check when you have two or three trailers. Follow the inspection procedures in paragraph 7-3 and inspect all your trailers.

Double and triple trailers must be driven smoothly to avoid rollover or jackknife. Therefore, look far enough ahead so you can slow down or change lanes gradually when necessary.

Double and triple trailers are longer and require more space for turning or stopping suddenly than other vehicles. Increase your following distance. Make sure you have large enough gaps before entering or crossing traffic. Be sure you are clear at the sides before changing lanes.

Drive with care in adverse conditions. In bad weather, slippery conditions, and mountain driving, you must be especially careful if you are pulling double and triple bottoms. You will have greater length and more dead axles to pull with your drive axles than other drivers. This increases the chance of skids and loss of traction.

7-2. COUPLING AND UNCOUPLING. Knowing how to couple and uncouple correctly is the basis to safe operation of double and triple trailers. Incorrect coupling and uncoupling can be very dangerous. Follow the correct coupling and uncoupling steps.

a. **Coupling Twin Trailers.** Ensure you have correctly coupled the tractor and first trailer according to Chapter 6. Secure the second (rear) trailer. If the second trailer does not have spring brakes, drive the tractor close to the trailer; connect the emergency line, charge the trailer air tank,

and disconnect the emergency line. This will set the trailer emergency brakes (if the slack adjusters are correctly adjusted). Chock the wheels if you have any doubt about the brakes.

NOTE: Couple the tractor and first trailer as described in Chapter 6, paragraph 6-3.

CAUTION

For the safe handling on the road, the more heavily loaded semitrailer should be coupled first behind the tractor. The lighter semitrailer should be in the rear.

- Position the converted dolly in front of the second (rear) trailer. A converter gear or dolly is a coupling device of one or two axles and a fifth wheel by which a semitrailer can be coupled to the rear of a tractor-trailer combination, forming a double-bottom rig.
- Release the dolly brakes by opening the air tank petcock. (Or, use the parking brake control if the dolly has spring brakes.)
- If distance is not too great, wheel the dolly into position by hand in line with the kingpin or use the tractor and first semitrailer to pick up the converter dolly. Position the combination as close as possible to the converter dolly. Move the dolly to the first semitrailer's rear and couple it to the trailer pintle. Lock the pintle hook. Secure the dolly support in the raised position. Pull the dolly into position as close as possible to the nose of the second semitrailer. Unhook the dolly from the first trailer. Wheel the dolly into position in front of the second semitrailer in line with the kingpin.
- Connect the converter dolly to the front trailer. Back the first semitrailer into position in front of the dolly tongue. Hook the dolly to the front trailer. Lock the pintle hook. Secure the converter gear support in the raised position.
- Position the converter dolly in front of the second (rear) trailer. Lock the trailer brakes and/or chock the wheels. Make sure the trailer height is slightly lower than the center of the fifth wheel, so the trailer is raised slightly when the dolly is pushed under. Back the converter dolly under the rear trailer. Raise the landing gear slightly off the ground to prevent damage if the trailer moves. Test the coupling by pulling against the pin of the number two semitrailer. Make visual check of the coupling. There should be no space between the upper and lower fifth wheel and the locking jaws have closed around the kingpin. Close the converter air tank petcock and shutoff service and emergent y valves at the rear of the second trailer. Open the shutoff valves at the rear of the first trailer and dolly if equipped. Raise the landing gear completely. Charge the trailer air supply (push in the air supply knob). Check for air at the rear of the second trailer by opening the emergency line shutoff valve. If air pressure is not present, something is wrong and your brakes will not work.

b. **Uncoupling the Rear Trailer.** Park the vehicle in a straight line on firm, level ground. Apply the parking brakes to prevent vehicle movement. If the second trailer does not have spring brakes, chock its wheels. Lower the second semitrailer's landing gear enough to remove some weight from the dolly. Close the air shutoffs at the first semitrailer's rear and on the dolly, if so equipped. Disconnect all dolly air and electric lines and secure them. Release the dolly brakes. Release the converter dolly fifth wheel latch. Slowly pull the tractor, first semitrailer, and dolly forward to pull the dolly out from under the rear semitrailer.

c. **Uncoupling the Converter Dolly.** Lower the dolly landing gear. Disconnect the safety chains. Apply the converter gear spring brakes or chock the wheels. Release the pintle hook on the first semitrailer. Slowly pull clear of the dolly.

CAUTION

Never unlock the pintle hook while the dolly is under the rear trailer. The dolly tow bar may fly up, possibly causing injury or making it very difficult to re-couple.

d. **Coupling and Uncoupling Triple Trailers.** Perform the following three steps to couple and uncouple triple trailers:

- *Step 1* - Couple the second and third trailers using the method for coupling double trailers. Uncouple the tractor and drive away from the second and third trailers.
- *Step* 2 - Couple the tractor and first trailer to the second and third trailers. Use the method for coupling tractor-semitrailers to couple the tractor to the first trailer. Move the converter dolly into position. Use the method for coupling double trailers to couple the first trailer to the second one. Triple trailers are now complete.
- *Step* 3 - To uncouple triple trailers, uncouple the third trailer by pulling the dolly out. Then use the method for uncoupling double trailers to unhitch the dolly. Uncouple the remaining trailers as you would any double-bottom using the method already described.

e. **Coupling and Uncoupling Other Combinations.** The methods addressed above apply to more common tractor-trailer combinations. However, there are other ways to couple and uncouple the many types of truck-trailer and tractor-trailer combinations. Learn the right way to couple and uncouple the vehicles you will drive according to the manufacturer's and/or owner's instructions.

7-3. INSPECTING DOUBLE AND TRIPLE TRAILERS. Use the seven-step inspection procedure (see Chapter 2) to inspect your combination vehicle. A combination vehicle has more things to inspect than a single vehicle. Many of these additional things are just more of what are on a single vehicle (for example, tires, wheels, lights, and reflectors). However, there are also some new things to check.

Check the following during a walkaround inspection (including those listed in Chapter 2, step 5):

- ***Check the coupling system areas.***

■ *Check the fifth wheel (lower).* Be sure it is securely mounted to the frame and does not have missing or damaged parts. Check for proper amounts of grease. Be sure no visible space is between the upper and lower fifth wheel. Be sure locking jaws are around the shank, not the head, of the kingpin. Be sure the release arm is properly seated and the safety latch/lock engaged.

■ *Check the fifth wheel (upper).* Be sure the glide plate is securely mounted to the trailer frame. Be sure the kingpin is not damaged.

■ *Check the air and electric lines to the trailer*. Be sure the electrical cord is plugged in and secured. Be sure the air lines are connected to glad hands, have no air leaks, and are secured with sufficient slack in the lines for turns. Be sure all lines are free from damage.

■ *Check the sliding fifth wheel.* Be sure the slide is not damaged or have parts missing. Check for proper amounts of grease. Be sure all locking pins are present and locked in place. If air powered, check for air leaks. Check the fifth wheel to be sure the tractor frame will not hit the landing gear or the cab will not hit the trailer during turns.

■ *Check the landing gear.* Be sure that it is raised all the way, has no missing parts, and is not damaged. Be sure the crank handle is in place and secured. If power operated, make sure there are no air or hydraulic leaks.

■ *Check the double and triple trailers.* When checking the double and triple trailers be sure of the following:

- The shutoff valves (at the rear of trailers and in service and emergency lines) are open at the rear of front trailers and closed at the rear of the last trailer and at the converter dolly air tank drain valve.
- Air lines are supported and glad hands are properly connected. If a spare tire is carried on the converter gear (dolly), be sure it is secured.
- The dolly's pintle-eye is inserted in the trailers' pintle hooks.
- The pintle hooks are latched.
- The safety chains are secured to the trailers.
- Light cords are firmly affixed to the trailer sockets.

- ***Check the combination vehicle brakes.*** Check the combination vehicle brakes in addition to inspecting the air brake systems as described in Chapter 5, paragraph 5-3.

7-4. DOUBLE AND TRIPLE TRAILERS AIR BRAKE CHECK. Check the brakes on a double or triple trailer the same way you do on any other combination vehicle. Chapter 6 explains how to check air brakes on a combination system. You make some additional checks on double and triple trailers.

a. **Check That Air Flows to All Trailers (Double and Triple Trailers).** Use the tractor parking brake and/or chock the wheels to hold the vehicle. Wait for the air pressure to reach normal. Then push in the red trailer air supply knob to supply air to the emergency (supply) lines. Use the trailer hand brake to provide air to the service line. Open the emergency line shutoff valve at the rear of the last trailer. You should hear air escaping, showing the entire system is charged. Close the emergency line valve. Open the service line valve to check that service pressure goes through all the trailers. (This test assumes that the trailer hand brake or the service brake pedal is on.) Then close the valve. If you do not hear air escaping from both lines, be sure the shutoff valves on the other trailers and dollies are in the open position. You must have air all the way to the back for all the brakes to work.

b. **Test the Tractor Protection Valve.** Charge the trailer air brake system; that is, build up normal air pressure and push in the air supply knob. Shut off the engine. Step on and off the brake pedal several times to reduce the air pressure in the tanks. The trailer air supply control (also called the tractor protection valve control) should pop out (or go from the normal to emergency position) when air pressure falls into the pressure range the manufacturer specifies (usually within 20 to 45 psi).

NOTE: If the tractor protection valve does not work right, an air hose or trailer brake leak could drain all the air from the tractor. This would cause the emergency brakes to come on, with possible loss of control.

c. **Test the Trailer Emergency Brakes.** Charge the trailer air brake system. Be sure the trailer rolls freely. Then stop and pull out the trailer air supply control (also called the tractor protection valve control or trailer emergency valve) or place it in the emergency position. Pull gently on the trailer with the tractor to be sure the trailer emergency brakes are activated.

d. **Test the Trailer Service Brakes.** Check for normal air pressure. Release the parking brakes. Move the vehicle forward slowly and apply the trailer brakes with the hand control (trolley valve), if so equipped. You should feel the brakes engage. This tells you the trailer brakes are connected and working. (Test the trailer brakes with the hand valve, but control them in normal operation with the foot pedal.) This will apply air to the service brakes at all wheels.

Test Your Knowledge

1. What is a converter dolly?
2. Do convertor dollies have spring brakes?
3. What three methods can you use to secure a second trailer before coupling?
4. How do you check to make sure the trailer height is correct before coupling?
5. What visual checks do you make when coupling?
6. Why should you pull a dolly out from under a trailer before you disconnect it from the trailer in front?
7. What should you check for when inspecting the converter dolly?
8. What should you check for when inspecting the pintle hook?
9. Should the shut-off valves on the rear of the last trailer be open or closed?
10. Should the shut-off valves on the rear of the first trailer in a set of doubles be opened or closed?
11. Should the shut-off valves on the middle trailer of a set of triples be open or closed?
12. How can you test that air flows to all trailers?

These questions may be on the test. If you cannot answer all questions, reread paragraphs 7-1 through 7-4.